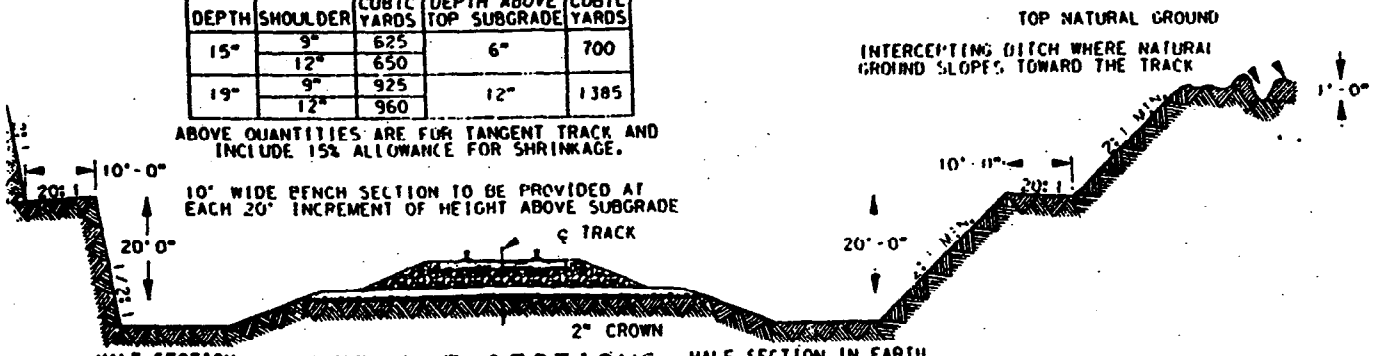
| MATERIAL REQUIRED FOR 1000 FEET OF SINGLE TRACK | | | | |
|---|---|---|---|---|
| BALLAST | | | SELECTED MATERIAL | |
| DEPTH | SHOULDER | CUBIC YARDS | DEPTH ABOVE TOP SUBGRADE | CUBIC YARDS |
| 15" | 9" | 625 | 6" | 700 |
| | 12" | 650 | | |
| 19" | 9" | 925 | 12" | 1385 |
| | 12" | 960 | | |

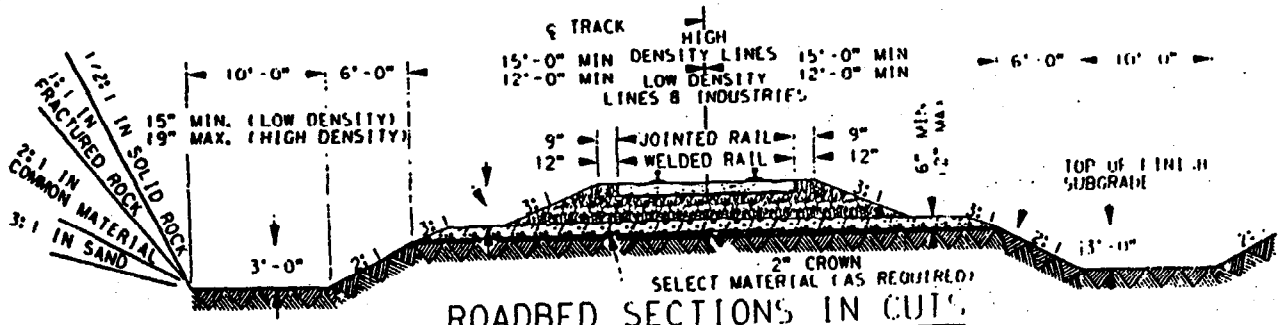
ABOVE QUANTITIES ARE FOR TANGENT TRACK AND INCLUDE 15% ALLOWANCE FOR SHRINKAGE.



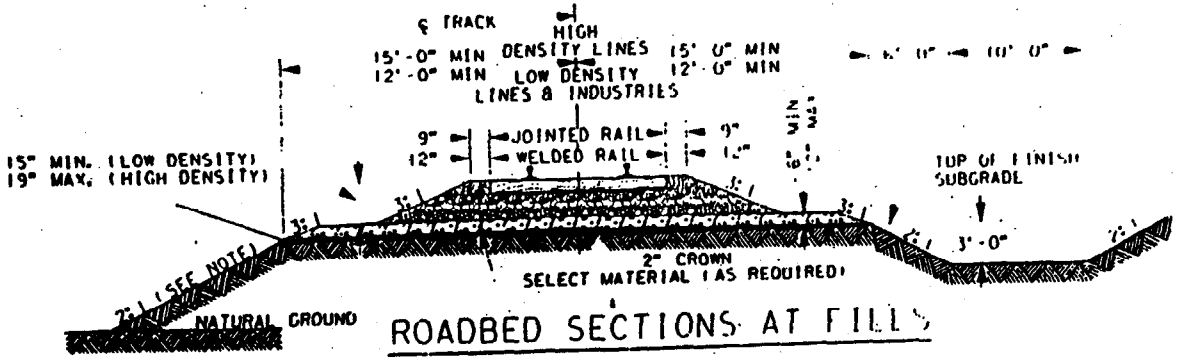

HALF SECTION IN SOLID ROCK

## DEEP CUT SECTIONS

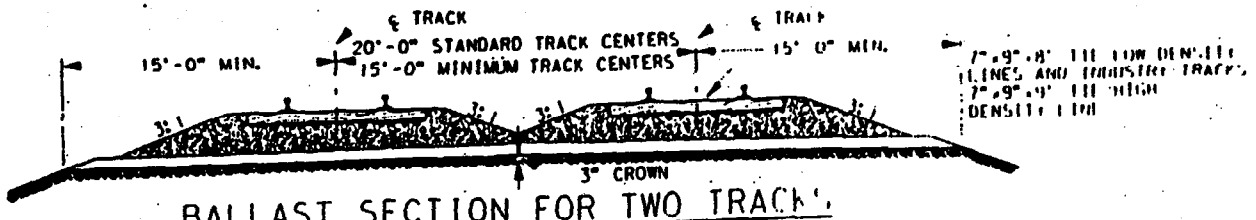
HALF SECTION IN EARTH OR LOOSE ROCK SEE NOTE 2



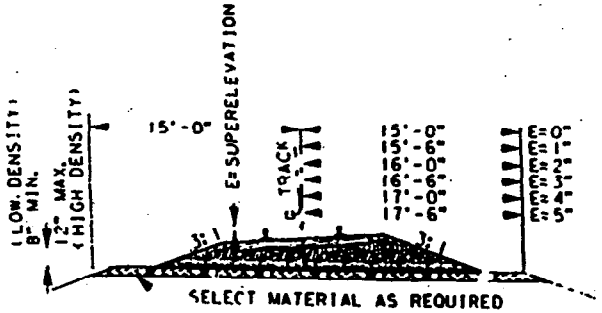

## ROADBED SECTIONS IN CUTS




## ROADBED SECTIONS AT FILLS




## BALLAST SECTION FOR TWO TRACKS




## ROADBED SECTION AT CURVED TRACK

FOR DETAILS NOT SHOWN, SEE CUT AND FILL SECTIONS ELSEWHERE ON THIS SHEET

NOTES:

THE DEPTH OF BALLAST AND DEPTH OF SELECTED MATERIAL SHALL BE DECIDED ON THE BASIS OF VOLUME OF TRAFFIC AND THE QUALITY OF SELECTED MATERIAL AND SUBGRADE DETERMINED BY THE RAILROAD'S ENGINEER SUBJECT TO THE APPROVAL OF THE CHIEF ENGINEER.

SLOPES SHOWN FOR BANKS IN CUTS AND ON FILLS SHALL BE CONSIDERED STANDARD AND GENERALLY USED, BUT MAY BE MODIFIED AS REQUIRED BY LOCAL CONDITIONS AND CHARACTER OF MATERIAL.

BALLAST MUST BE EQUALIZED IN ADVANCE OF DRESSING SO THAT FINAL SECTION WILL CONFORM TO SLOPE REQUIREMENTS AND CHARACTER OF MATERIAL.

WHERE OFF-TRACK ROADWAY IS TO BE PROVIDED, ADD 8'-0" ADDITIONAL WIDTH TO THE ROADBED SECTION AT TOP OF SUBGRADE ELEVATION.

ALL FILL SLOPES SHALL BE FACED WITH COVER OF MATERIAL SUITABLE FOR GROWING GRASS AND HAVING A THICKNESS OF APPROXIMATELY 6 INCHES. THE OUTER SURFACE OF THIS COVER SHALL COINCIDE WITH THE DESIGN SLOPE OF THE EMBANKMENT. MATERIAL FOR THIS COVER MAY BE OBTAINED FROM STRIPPING.

FLOW LINE ON 0.2% MINIMUM GRADE DITCHES AND BENCHES.

FLAT BOTTOM DITCHES ARE REQUIRED FOR HIGH DENSITY LINES, HOWEVER A "V" DITCH IS ACCEPTABLE FOR INDUSTRY TRACKS WHEN RIGHT-OF-WAY IS LIMITED AND WHERE LOCAL CONDITIONS AND CHARACTER OF MATERIAL SO REQUIRE.

REF U.P. STD DWG PAGE 0001.

UNION PACIFIC RAILROAD ENGINEERING STANDARDS

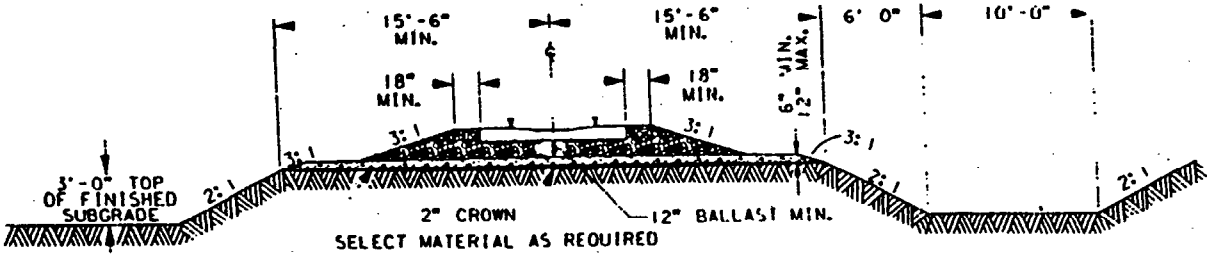
# ROADBED SECTION FOR WOOD TIE TRACK CONSTRUCTION

UNION PACIFIC

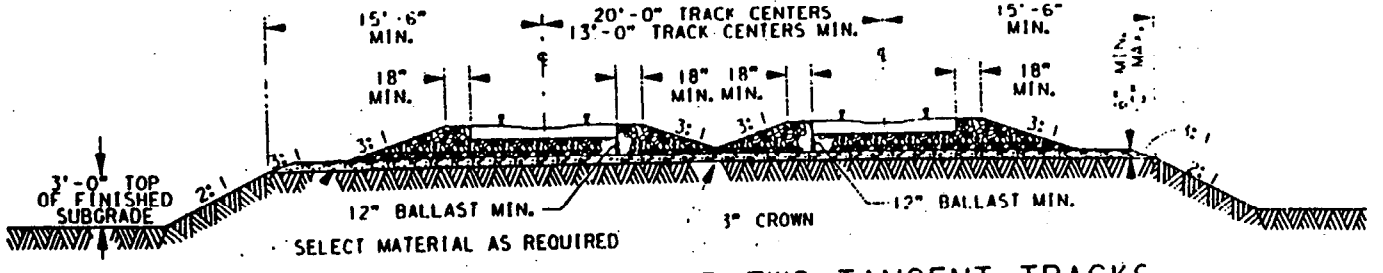
ADOPTED: JAN. 21, 1927
REVISED: DEC. 31, 1996
FILE NO.: 0001

STD DWG 0001

STD DWG

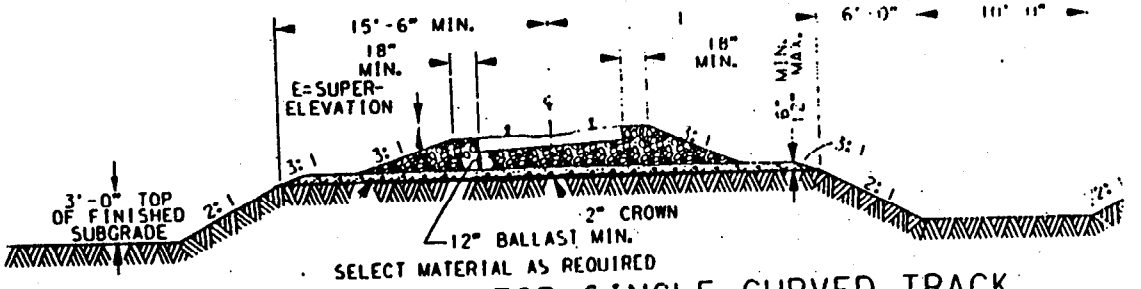



## BALLAST SECTIONS FOR SINGLE TANGENT TRACK

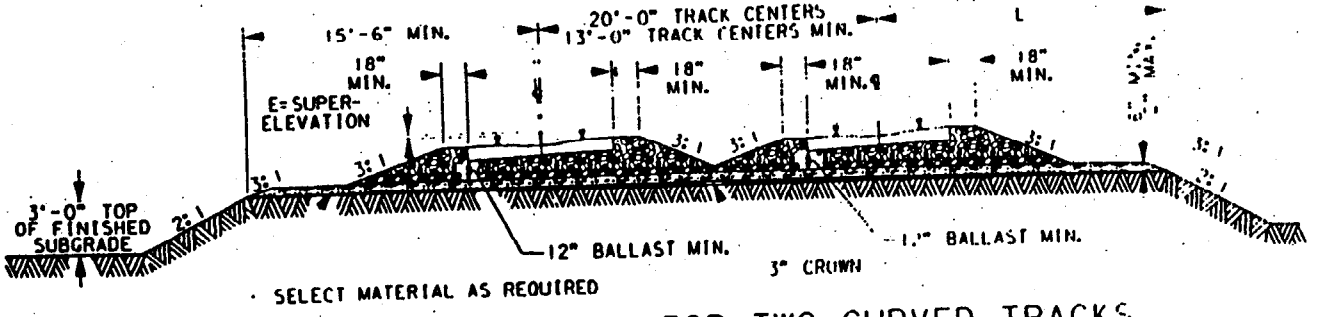



## BALLAST SECTION FOR TWO TANGENT TRACKS

| BALLAST REQUIRED FOR 1000 FEET OF SINGLE TRACK (CUBIC YARDS) | | |
|---|---|---|
| E (IN.) | 18" | L MIN. |
| 0 | 1053 | 15'-6" |
| 1 | 1125 | 16'-0" |
| 2 | 1196 | 16'-6" |
| 3 | 1274 | 17'-0" |
| 4 | 1360 | 17'-6" |
| 5 | 1442 | 18'-0" |




## BALLAST SECTIONS FOR SINGLE CURVED TRACK




## BALLAST SECTION FOR TWO CURVED TRACKS

NOTES:
ACTUAL SUBBALLAST DEPTH TO BE DETERMINED BY CHIEF ENGINEER OF DESIGN

SUBGRADE EXTENSION TO 16'-6" WHEN SUPERELEVATION IS 5" OR GREATER.

TOP OF BALLAST TO BE FLAT ACROSS AT 1" UNDER BOTTOM OF RAIL.

FOR ROADBED DETAILS, SEE STD DWG 0001
FOR CONCRETE TIE DETAILS, SEE STD DWG 0201

SOURCES OF ACCEPTABLE BALLAST FOR CONCRETE TIE TRACK ARE:

| | |
|---|---|
| U.P. RESOURCES | SMELTER, UT |
| OR | GADSHILL, MO |
| MERIDIAN | GRANITE, WY |
| HARNEY ROCK | HAINES, OR |

UNION PACIFIC RAILROAD
ENGINEERING STANDARDS

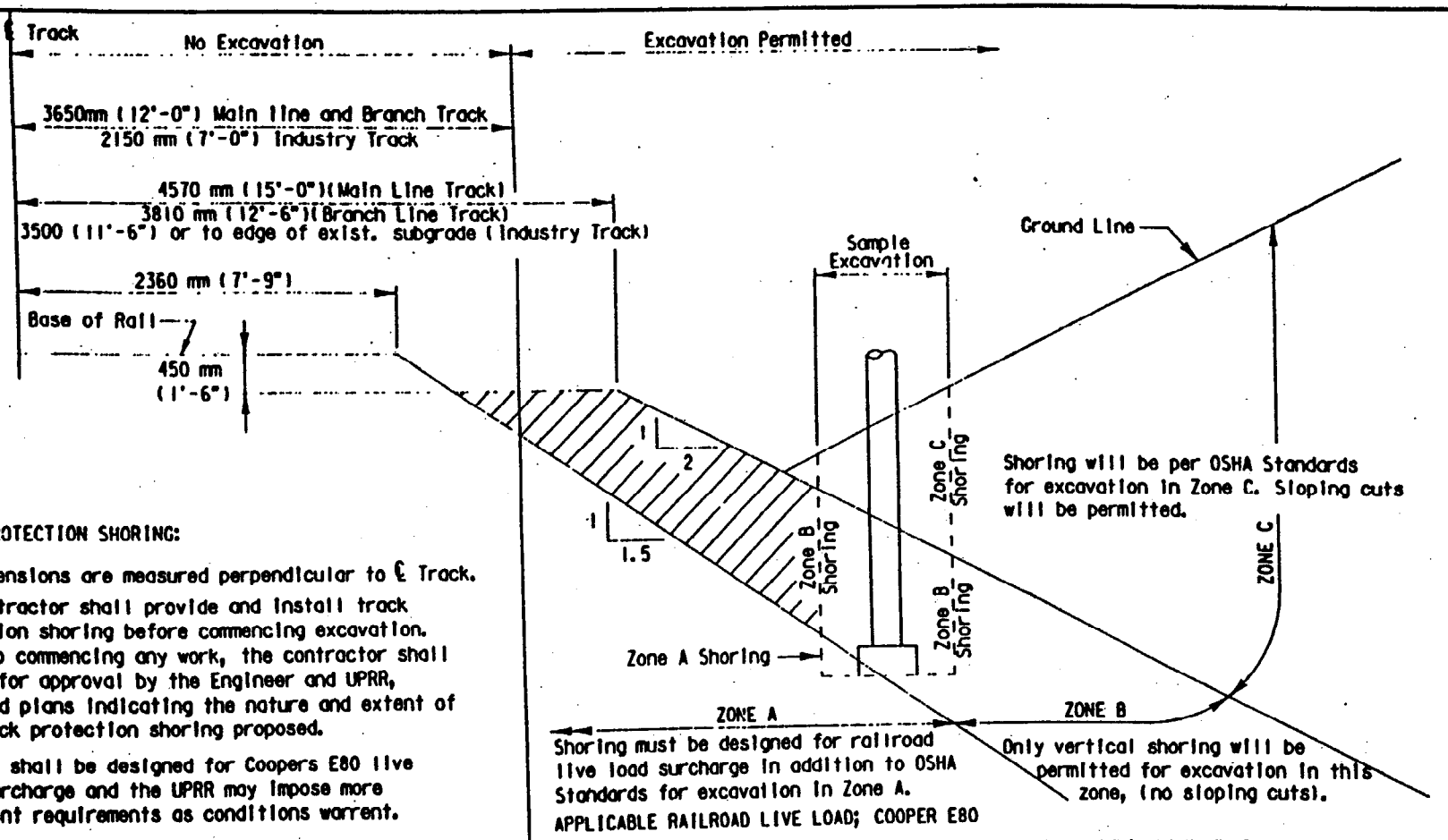
# ROADBED SECTIONS FOR CONCRETE TIE TRACK CONSTRUCTION

UNION PACIFIC

ADOPTED: DEC. 31, 1996
REVISED:
FILE NO.: 0002

STD DWG. 0002

STD DWG




TRACK PROTECTION SHORING:

All dimensions are measured perpendicular to ℄ Track.

The contractor shall provide and install track protection shoring before commencing excavation. Prior to commencing any work, the contractor shall submit for approval by the Engineer and UPRR, detailed plans indicating the nature and extent of the track protection shoring proposed.

Shoring shall be designed for Coopers E80 live load surcharge and the UPRR may impose more stringent requirements as conditions warrent.

For excavations which encroach into railroad live load surcharge zone, shoring plans will be accompanied by a copy of the design calculations, and both must be stamped by a registered professional engineer.

Design of shoring shall comply with UPRR guidlines for design and construction of shoring adjacent to active railroad tracks.

TRACK PROTECTION SHORING REQUIREMENTS

# UNION PACIFIC RAILROAD

## GENERAL SHORING REQUIREMENTS

## OFFICE OF CHIEF ENGINEER DESIGN

DATE: 3-31-98 REDRAWN

C.E. 106613